

# I-Chao Shen

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contact: [ichaoshen@g.ecc.u-tokyo.ac.jp](mailto:ichaoshen@g.ecc.u-tokyo.ac.jp)

website: <https://jdily.github.io>

orcid: 0000-0003-4201-3793

## Research Interests

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Computer graphics, vector graphics, data-driven 2D/3D geometry analysis and processing, machine learning.

## Education

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### National Taiwan University

Ph.D. in Computer Science

Advisor: Bing-Yu Chen.

Thesis: 2D Visual Content Design Driven by Human-Guided Optimization

Taipei, Taiwan

Sep 2017 - Dec. 2020

### National Taiwan University

Master in Information Management and MBA

Advisor: Bing-Yu Chen.

Thesis: Perspective-aware Warping for Seamless Stereoscopic Image Cloning

Taipei, Taiwan

Sep 2009 - June 2011

### National Taiwan University

Bachelor in Information Management

Taipei, Taiwan

Sep 2005 - June 2009

## Experiences

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### Assistant Professor, Tokyo, Japan

Dept. of Computer Science, The University of Tokyo

Apr. 2023 -

### Adjunct Project Assistant Professor, Tokyo, Japan

Graduate School of Arts and Sciences, The University of Tokyo

Sep. 2025 -

### Adjunct Assistant Professor, Tokyo, Japan

The Institute for AI and Beyond, The University of Tokyo

July. 2023 - Mar. 2025

### Project Assistant Professor, Tokyo, Japan

Dept. of Creative Informatics, The University of Tokyo

Sep. 2022 - Mar. 2023

### Postdoctoral researcher - JSPS Foreign Researchers Fellowship, Tokyo, Japan

Host : Takeo Igarashi

Dec. 2020 - Aug. 2022

### Research Visitor - JST CREST Project, Tokyo, Japan

Supervisor : Takeo Igarashi

Feb 2018 - July 2018, Aug 2019

### Research Assistant - CMLab, National Taiwan University, Taipei, Taiwan

Supervisor : Bing-Yu Chen

Apr 2017 - July 2017

### Research Assistant - Imager Lab, The University of British Columbia,

Vancouver, Canada

Supervisor : Alla Sheffer

Sep 2014 - Mar 2017

### Research Intern - Imagination Lab, Adobe Research, San Jose, CA

Supervisor : Nathan Carr, Duygu Ceylan, Zhaowen Wang

May 2015 - Aug 2015

### Research Assistant - CITI, Academia Sinica, Taipei, Taiwan

Supervisor : Wen-Huang Cheng

Sep 2011 - July 2014

## Publications

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### Axis-Aligned Document Dewarping

Chaoyun Wang, I-Chao Shen, Takeo Igarashi, Caigui Jiang

AAAI 2026 (Oral) ([arxiv:2507.15000](https://arxiv.org/abs/2507.15000))

**AutoSketch: VLM-assisted Style-Aware Vector Sketch Completion**

Hsiao-Yuan Chin\*, I-Chao Shen\*†, Yi-Ting Chiu, Ariel Shamir, Bing-Yu Chen† (\*: joint first authors, †: joint corresponding authors)

SIGGRAPH ASIA 2025 (conference track) ([arxiv:2502.06860](https://arxiv.org/abs/2502.06860))

**ScrapReCover: An Interactive Optimization System for Freeform Patchwork Layouts**

Masahiro Kono, Maria Larsson, I-Chao Shen and Takeo Igarashi

ACM Symposium on Computational Fabrication (SCF) 2025

**LayoutRectifier: An Optimization-based Post-processing for Graphic Design Layout Generation**

I-Chao Shen, Ariel Shamir, Takeo Igarashi

Pacific Graphics 2025 (Journal track)

**Real-Time Per-Garment Virtual Try-On with Temporal Consistency for Loose-Fitting Garments**

Zaiqiang Wu, I-Chao Shen, Takeo Igarashi

Pacific Graphics 2025 (Journal track)

**MeshLLM: Empowering Large Language Models to Progressively Understand and Generate 3D Mesh**

Shuangkang Fang, I-Chao Shen, Yufeng Wang, Yi-Hsuan Tsai, Yi Yang, Shuchang Zhou, Wenrui Ding, Takeo Igarashi, Ming-Hsuan Yang

ICCV 2025 (Highlight, top 3%-5%)

**NeRF Is a Valuable Assistant for 3D Gaussian Splatting**

Shuangkang Fang, I-Chao Shen, Takeo Igarashi, Yufeng Wang, ZeSheng Wang, Yi Yang, Wenrui Ding, Shuchang Zhou

ICCV 2025

**GarmentImage: Raster Encoding of Garment Sewing Patterns with Diverse Topologies**

Yuki Tatsukawa, Anran Qi, I-Chao Shen, Takeo Igarashi

SIGGRAPH 2025 (Conference Track)

**The Mokume Dataset and Inverse Modeling of Solid Wood Textures**

Maria Larsson, Hodaka Yamaguchi, Ehsan Pajouheshgar, I-Chao Shen, Kenji Tojo, Chia-Ming Chang, Lars Hansson, Olof Broman, Takashi Ijiri, Ariel Shamir, Wenzel Jakob, Takeo Igarashi

SIGGRAPH 2025 (Transaction on Graphics)

**FontCraft: Multimodal Font Design Using Interactive Bayesian Optimization**

Yuki Tatsukawa, I-Chao Shen, Mustafa Doga Dogan, Anran Qi, Yuki Koyama, Ariel Shamir, Takeo Igarashi  
CHI 2025

**CompAct: Designing Interconnected Compliant Mechanisms with Active Material Integration**

Humphrey Yang, I-Chao Shen, Nikolas Martelaro, Bo Zhu, Haoran Xie, Takeo Igarashi, Lining Yao  
CHI 2025

**Approximating Procedural Models of 3D Shapes with Neural Networks**

Ishtiaque Hossain, I-Chao Shen, Oliver van Kaick

Eurographics 2025

**Interactive Multilayer Gaussian Garments for Low-Cost Try-On**

Ryan Zesch, I-Chao Shen, Haoran Xie, Bo Zhu, Shinjiro Sueda, Takeo Igarashi

Graphics Interface (GI) 2025

**FontCLIP: A Semantic Typography Visual-Language Model for Multilingual Font Applications**

Yuki Tatsukawa, I-Chao Shen, Anran Qi, Yuki Koyama, Takeo Igarashi, Ariel Shamir  
Eurographics 2024

**Learned Inference of Annual Ring Pattern of Solid Wood**

Maria Larsson\*, Takashi Ijiri\*, I-Chao Shen, Hironori Yoshida, Ariel Shamir, Takeo Igarashi (\*: joint first authors)

Computer Graphics Forum 2024

**Virtual Measurement Garment for Per-Garment Virtual Try-On**  
Zaiqiang Wu, Jingyuan Liu, Long Hin Toby Chong, I-Chao Shen, Takeo Igarashi  
Graphics Interface 2024

**Improving Cache Placement for Efficient Cache-based Rendering**  
Yu-Ting Wu, I-Chao Shen  
The Visual Computer 2024

**StylePart: Image-based Shape Part Manipulation**  
I-Chao Shen, Li-Wen Su, Yu-Ting Wu, Bing-Yu Chen  
The Visual Computer 2024

**NeRF-In: Free-Form NeRF Inpainting with RGB-D Priors**  
I-Chao Shen\*, Hao-Kang Liu\*, Bing-Yu Chen (\*: joint first authors)  
IEEE Computer Graphics and Applications (CG&A) 2023

**Palette-Based and Harmony-Guided Colorization for Vector Icons**  
Miao Lin\*, I-Chao Shen\*, Hsiao-Yuan Chin, Ruo-Xi Chen, Bing-Yu Chen (\*: joint first authors)  
Computer Graphics Forum (Proceeding of Pacific Graphics 2023)

**Data-guided Authoring of Procedural Models of Shapes**  
Ishtiaque Hossain, I-Chao Shen, Takeo Igarashi, Oliver van Kaick  
Computer Graphics Forum (Proceeding of Pacific Graphics 2023)

**EvIcon: Designing High-Usability Icon with Human-in-the-loop Exploration and IconCLIP**  
I-Chao Shen, Fu-Yin Cherng, Takeo Igarashi, Wen-Chieh Lin, Bing-Yu Cheng  
Computer Graphics Forum Volume 42, Issue 6, September 2023

**360MVSNet: Deep Multi-view Stereo Network with 360° Images for Indoor Scene Reconstruction**  
Ching-Ya Chiu, Yu-Ting Wu, I-Chao Shen, Yung-Yu Chuang  
IEEE/CVF Winter Conference on Applications of Computer Vision (WACV) 2023 (Algorithm Track)

**ClipGen: A Deep Generative Model for Clipart Vectorization and Synthesis**  
I-Chao Shen, Bing-Yu Chen  
IEEE Transactions on Visualization and Computer Graphics (TVCG), pp. 4211-4224, vol. 28, Dec. 2022

**StyleFaceUV: a 3D Face UV Map Generator for View-Consistent Face Image Synthesis**  
Wei-Chieh Chung, Jian-Kai Zhu, I-Chao Shen, Yu-Ting Wu, Yung-Yu Chuang  
The British Machine Vision Conference (BMVC) 2022

**ODEN: Live Programming for Neural Network Architecture Editing**  
Chunqi Zhao, I-Chao Shen, Tsukasa Fukusato, Jun Kato, Takeo Igarashi  
Proceeding of ACM Intelligent User Interfaces (IUI) 2022

**Per Garment Capture and Synthesis for Real-time Virtual Try-on**  
Toby Chong, I-Chao Shen, Nobuyuki Umetani, Takeo Igarashi  
Proceeding of User Interface Software and Technology (UIST) 2021

**Data-driven Sketch Beautification with Neural Feature Representation**  
I-Chao Shen  
IEEE Computer Graphics and Applications (CG&A) 2021

**Multi-Resolution Shared Representative Filtering for Real-Time Depth Completion**  
Yu-Ting Wu, Tzu-Mao Li, I-Chao Shen, Hong-Shiang Lin, Yung-Yu Chuang  
High-Performance Graphics (HPG) 2021

**ClipFlip : Multi-view Clipart Design**  
I-Chao Shen, Kuan-Hung Liu, Li-Wen Su, Yu-Ting Wu, and Bing-Yu Chen  
Computer Graphics Forum, Volume 40, Issue 1, Feb 2021, arXiv:2008.12933 [cs.GR]

**Interactive Optimization of Generative Image Modeling using Sequential Subspace Search and Content-based Guidance**

Toby Chong Long Hin\*, I-Chao Shen\*, Issei Sato, and Takeo Igarashi (\*: joint first authors)  
Computer Graphics Forum, Volume 40, Issue 1, Feb 2021, arXiv:1906.09840 [cs.GR]

**ZomeFab: Cost-effective Hybrid Fabrication with Zometools**  
I-Chao Shen, Ming-Shiuan Chen, Chun-Kai Huang, and Bing-Yu Chen  
Computer Graphics Forum, Volume 39, Issue 1, Feb 2020

**Director-360: Introducing Camera Handling to 360 Cameras**  
Hao-Juan Huang, I-Chao Shen, and Liwei Chan  
in proceeding of MobileHCI 2020

**Perception-Driven Semi-Structured Boundary Vectorization**  
Shayan Hoshyari, Edoardo Dominici, Alla Sheffer, Nathan Carr, Duygu Ceylan, Zhaowen Wang, I-Chao Shen  
ACM Transactions on Graphics (Proceedings of SIGGRAPH 2018).

**High-resolution 360 Video Foveated Stitching for Real-time VR**  
Wei-Tse Lee\*, Hsin-I Chen\*, Ming-Shiuan Chen, I-Chao Shen and Bing-Yu Chen  
Computer Graphics Forum (Proceedings of Pacific Graphics 2017)

**A Scalable Active Framework for Region Annotation in 3D Shape Collections**  
Li Yi, Vladimir G. Kim, Duygu Ceylan, I-Chao Shen, Mengyan Yan, Hao Su, Cewu Lu, Qixing Huang, Alla Sheffer, and Leonidas Guibas  
ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia 2016)

**Retargeting 3D Objects and Scenes with a General Framework**  
Chun-Kai Huang, Yi-Ling Chen, I-Chao Shen, and Bing-Yu Chen  
Computer Graphics Forum (Proceedings of Pacific Graphics 2016)

**Data-driven Handwriting Synthesis in a Conjoined Manner**  
Hsin-Yi Chen, Tse-Ju Lin, I-Chao Shen, and Bing-Yu Chen  
Computer Graphics Forum (Proceedings of Pacific Graphics 2015)

**Gestalt Rule Feature Points**  
I-Chao Shen and Wen-Huang Cheng  
IEEE Transactions on Multimedia (TMM), 17(4), pp. 526-537, 2015

**Geometrically Consistent Stereoscopic Image Editing using Patch-based Synthesis**  
Sheng-Jie Luo, Ying-Tse Sun, I-Chao Shen, Bing-Yu Chen, and Yung-Yu Chuang  
IEEE Transactions on Visualization and Computer Graphics (TVCG), 21(1), pp. 56-67, 2015

**Stroke-guided Image Synthesis for Skeletal Structure Editing**  
Sheng-Jie Luo, Chin-Yu Lin, I-Chao Shen, and Bing-Yu Chen  
Computer Graphics Forum (Proceedings of Pacific Graphics 2013)

**Perspective-Aware Warping for Seamless Stereoscopic Image Cloning**  
Sheng-Jie Luo, I-Chao Shen, Bing-Yu Chen, Wen-Huang Cheng, and Yung-Yu Chuang  
ACM Transactions on Graphics (Proceedings of SIGGRAPH Asia 2012).

## Technical Reports and Preprints

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**Cascaded Robust Rectification for Arbitrary Document Images**  
Chaoyun Wang, Quanxin Huang, I-Chao Shen, Takeo Igarashi, Nanning Zheng, Caigui Jiang  
arxiv preprint ([arxiv:2511.23150](https://arxiv.org/abs/2511.23150))

**Low-Barrier Dataset Collection with Real Human Body for Interactive Per-Garment Virtual Try-On**  
Zaiqiang Wu, Yechen Li, Jingyuan Liu, Yuki Shibata, Takayuki Hori, I-Chao Shen, Takeo Igarashi  
arxiv preprint ([arxiv:2506.10468](https://arxiv.org/abs/2506.10468))

**AvatarPerfect: User-Assisted 3D Gaussian Splatting Avatar Refinement with Automatic Pose Suggestion**  
Jotaro Sakamiya, I-Chao Shen, Jinsong Zhang, Mustafa Doga Dogan, Takeo Igarashi

arxiv preprint ([arxiv:2412.1560](https://arxiv.org/abs/2412.1560))

### AutoPoly: Predicting an Artist-Compatible Polygonal Mesh Construction Sequence from a Silhouette Image

I-Chao Shen, Yu Ju Chen, Oliver van Kaick, Takeo Igarashi

arxiv preprint ([arxiv:2203.15233](https://arxiv.org/abs/2203.15233))

## Workshop Papers, Short Papers, Posters

### Many-Inbetweens Browsing: Exploring Pre-Generated Inbetweens for 2D Animation

Jotaro Sakamiya, Akinobu Maejima, Yuki Koyama, I-Chao Shen, Takeo Igarashi

SIGGRAPH ASIA 2025 Poster Program

### LayerPack: Training-Free Animation Inbetweening with Cross-Layer Consistency

Atsushi Maruyama, Sosui Koga, Akinobu Maejima, Yuki Koyama, I-Chao Shen, Takeo Igarashi

SIGGRAPH ASIA 2025 Poster Program

### Designing Reconfigurable Joints

Atsushi Maruyama, Maria Larsson, I-Chao Shen, Takeo Igarashi

SIGGRAPH ASIA 2024 Technical Communication (Honorable Mention Award)

### DualAvatar: Robust Gaussian Splatting Avatar with Dual Representation

Jinsong Zhang, I-Chao Shen, Jotaro Sakamiya, Yu-Kun Lai, Takeo Igarashi, Kun Li

SIGGRAPH ASIA 2024 Poster Program

### Generating Font Variations Using Latent Space Trajectory

Sotaro Kanazawa, I-Chao Shen, Yuki Tatsukawa, Takeo Igarashi

SIGGRAPH ASIA 2024 Poster Program

### 3D Reconstruction from Sketch with Hidden Lines by Two-Branch Diffusion Model

Yuta Fukushima, Anran Qi, I-Chao Shen, Yulia Gryaditskaya, Takeo Igarashi

Eurographics 2024 Short Paper

### MicroGlam: Microscopic Skin Image Dataset with Cosmetics

Toby Chong, Alina Chadwick, I-Chao Shen, Haoran Xie, Takeo Igarashi

SIGGRAPH ASIA 2023 Technical Communication

### Computational Design of Nebuta-like Paper-on-Wire Artworks

Naoki Agata, Anran Qi, Yuta Noma, I-Chao Shen, Takeo Igarashi

SIGGRAPH 2023 Poster Program

### Palette-Based Colorization for Vector Icons

Miao Lin, I-Chao Shen, Hsiao-Yuan Chin, Ruo-Xi Chen, Bing-Yu Chen

SIGGRAPH 2023 Poster Program

### OVERPAINT: Automatic Multi-Layer Stencil Generation without Bridges

Yuta Fukushima, Anran Qi, I-Chao Shen, Takeo Igarashi

SIGGRAPH ASIA 2022 Technical Communication

### Guided Image Weathering using Image-to-Image Translation

Li-Yu Chen, I-Chao Shen, and Bing-Yu Chen

SIGGRAPH ASIA 2021 Technical Communication

### Real-time Image-based Virtual Try-on with Measurement Garment

Toby Chong, I-Chao Shen, Yunfei Qian, Nobuyuki Umetani, Takeo Igarashi

SIGGRAPH ASIA 2021 Emerging Technologies

### Transferring Deep Reinforcement Learning with Adversarial Objective and Augmentation

I-Chao Shen, Shu-Hsuan Hsu, and Bing-Yu Chen

IJCAI-PRICAI 2020 Workshop on Knowledge-Based Reinforcement Learning (KBRL)

### Large-scale fabrication with interior zometool structure

Ming-Shiuan Chen, I-Chao Shen, Chun-Kai Huang, and Bing-Yu Chen

ACM SIGGRAPH Poster Program 2018

## A Deep Learning Based Method For 3D Human Pose Estimation From 2D Fisheye Images

Ching-Chun Chen, Chia-Min Wu, I-Chao Shen, and Bing-Yu Chen.  
ACM IUI Poster Program 2018

## Retargeting 3D objects and scenes

Chun-Kai Huang, Yi-Ling Chen, I-Chao Shen, and Bing-Yu Chen  
ACM SIGGRAPH Poster Program 2015

## Painting Photolization

Chien-Wen Jung, I-Chao Shen, Sheng-Jie Luo, Bing-Yu Chen, and Wen-Huang Cheng  
ACM SIGGRAPH ASIA Poster Program 2013

## Texturing and Deforming Meshes with Casual Images

I-Chao Shen, Yi-Hua Wang, Yu-Mei Chen, Bing-Yu Chen, and Wen-Huang Cheng  
ACM SIGGRAPH ASIA Poster Program 2012

## User-Assisted Disparity Maps

Hsin-Yi Chen, Yi-Shan Lin, I-Chao Shen, Sheng-Jie Luo, Wen-Huang Cheng and Bing-Yu Chen  
Pacific Graphics 2012 short paper

## MusicSpace: You “Play” The Music

Chun-Yu Tsai, Hung-Jung Lin, Tzu-Hao Kuo, Kai-Yin Cheng, I-Chao Shen Bing-Yu Chen, and Rung-Huei Liang  
ACM SIGGRAPH Poster Program 2010

## Patent

### Smoothing images using machine learning

Nathan A Carr, Zhaowen Wang, Duygu Ceylan, I-Chao Shen  
United States Patent, No. 9799102, issued October 24, 2017.

## Grants

UTokyo x Google, AI for Science and Society, PI, Japan	2025-2026
NII Open Collaborative Research, PI, Japan <a href="#">[Link]</a>	2025 - 2026
JSPS Kakenhi Grant-in-Aid for Young Scientists, PI, Japan <a href="#">[Link]</a>	2023 - 2028
AIP Challenge Researcher, Japan Science and Technology Agency (JST), PI, Japan <a href="#">[Link]</a>	2021 - 2022
JSPS Grant-in-Aid for Scientific Research for JPSP foreign fellow, Co-PI, Japan <a href="#">[Link]</a>	2021 - 2023

## Honors

IPPR Best Ph.D. dissertation award, Honorable mention	2021
JSPS Postdoctoral Fellowship for Foreign Researchers	2020 - 2022
MediaTek Fellowship	2017 - 2020

## Invited Talks

Domain-specific Visuals in Generative Era: Font, Garment, and Layout, <i>AsiaGraphics Web Seminar, Session 34.</i> <a href="#">[Link]</a>	Oct. 2025
Tailored Computational Visual Content Creation, <i>ISID (International Symposium on Intelligence Design) 2024</i>	Mar. 2024
Tailored Computational Visual Content Creation, <i>BAI Research Seminar, Institute for AI and Beyond, The University of Tokyo</i>	Feb. 2024
Computer Graphics around you everyday and how to become a Computer Graphics researcher, <i>Chikushigaoka High School, Fukuoka, Japan</i>	July. 2022

Computer Graphics around you everyday and how to become a Computer Graphics researcher,  
*Tokyo Metropolitan Tama High School of Science and Technology, Tokyo, Japan*  
JSPS science dialogue program

*July. 2022*

Per Garment Capture and Synthesis for Real-time Virtual Try-on,  
*JST CREST 8th Research Area Meeting*

*Sep. 2021*

2D Visual Content Design Driven by Human-Guided Optimization,  
*The University of Tokyo, Tokyo, Japan*

*Apr. 2021*

## Media

Per Garment Capture and Synthesis for Real-time Virtual Try-on

*2021, 2022*

- BS フジ - ガリレオ X 第 259 回「現実空間 × 想像空間二つの世界を重ねる最新技術」(JP)
- JST News
- NIKKEI (JP)
- ZAIKEI (JP)
- TechCrunch Japan (JP)
- Tii 技術情報 (JP)
- Independent TV (UK)

## Professional Services

- Technical Paper Committee and others:

- SIGGRAPH Technical Papers Committee (2026)
- SIGGRAPH ASIA Technical Papers Committee (2025) [[link](#)]
- Pacific Graphics Program Committee (2025) [[link](#)]
- Eurographics Short Papers International Program Committee (IPC) (2025) [[link](#)]
- SIGGRAPH Technical Papers COI Coordinator (2025) [[link](#)]
- SIGGRAPH ASIA Technical Papers Committee (2024) [[link](#)]
- AAAI (2023 [[link](#)], 2024 [[link](#)], 2025 [[link](#)])

- Reviewer:

- SIGGRAPH, SIGGRAPH ASIA
- NeurIPS, ICLR, ICML
- Eurographics
- CHI
- Pacific Graphics
- WACV
- BMVC
- Transaction on Multimedia (TMM)
- Transaction on Visualization and Computer Graphics (TVCG)

## References

**Takeo Igarashi**

Professor, Department of Computer Science and Graduate School of Information Science and Technology, The University of Tokyo, Japan

Email: [takeo@acm.org](mailto:takeo@acm.org)

**Bing-Yu Chen**

Professor in Department of Computer Science and Engineering / Information Management, National Taiwan University

Email: [robin@ntu.edu.tw](mailto:robin@ntu.edu.tw)

**Ariel Shamir**

Professor in Efi Arazi School of Computer Science , Reichman University

Email: [arik@runi.ac.il](mailto:arik@runi.ac.il)

**Yung-Yu Chuang**

Professor in Department of Computer Science and Engineering, National Taiwan University

Email: [cyy@csie.ntu.edu.tw](mailto:cyy@csie.ntu.edu.tw)